

DESCRIPTIONS OF THREE NEW FISHES OF THE FAMILY
CHÆTODONTIDÆ FROM THE PHILIPPINE ISLANDS.

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The species referred to in this paper represent hitherto undescribed forms of the family Chætodontidæ obtained in the Philippine Archipelago by the *Albatross* expedition.

The measurements herein used represent the ratio between length of part described and the standard length from tip of snout to end of last caudal vertebra, with the exception of eye, snout, maxillary, interorbital, fins, and least depth of caudal peduncle, which are expressed in ratio to head measured from tip of snout to posterior edge of opercle (not including opercular flap). The length of caudal peduncle is measured between the verticals drawn at base of last anal ray and at end of last vertebra. Even when the last dorsal and anal rays are cleft to base they are still counted as single rays. The scale formula indicates the number of scales in a transverse row from insertion of dorsal downward and backward to and including lateral line and from origin of anal upward and forward to lateral line and the number of transverse rows above the lateral line, between upper angle of opercle and end of last caudal vertebra.

CHÆTODON ARGENTATUS, new species.

Dorsal XIV, 22; anal III, 16; scales 4 + 10 — 33.

General form subrhomboidal, strongly compressed; head 3.12, deeper than long, upper profile nearly straight; depth of body 1.63; caudal peduncle shorter than deep, slender, depth 3.00; eye 3.00;

snout 2.64, conical; mouth moderate; maxillary 3.42, barely reaching vertical from anterior nostril; nostrils close to eye, anterior nostril larger, circular, provided with a flap posteriorly, posterior nostril elongate, slit-like; interorbital 3.33, very slightly rounded; preopercular border smooth except for a few weak denticulations near upper angle and on horizontal margin; teeth in bands, long, slender, with a slight constriction near tip; peritoneum silvery, with scattered dusky spots.

Scales unequal, those on middle of trunk larger than the others, arranged in rows which are very distinct both upward and backward and downward and backward; 22 transverse rows of scales between opercle and end of last vertebra; head, belly, and vertical

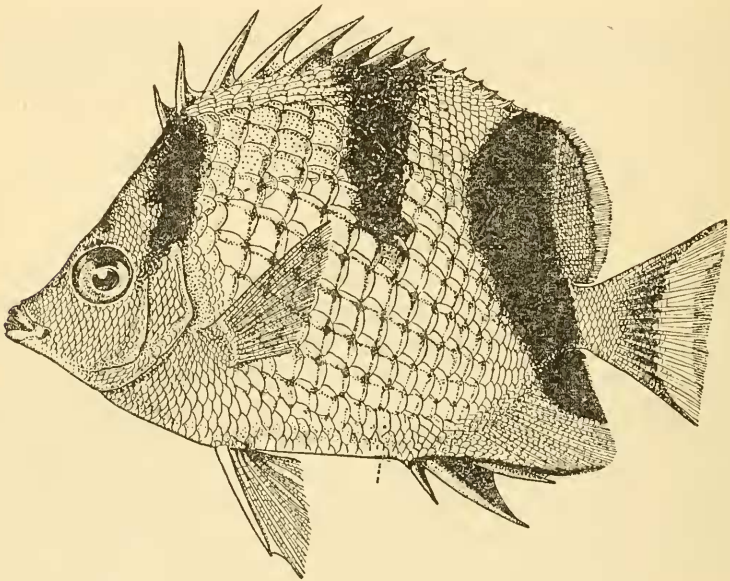


FIG. 1.—*CHLETODON ARGENTATUS*. (From the type. Natural size.)

fins finely scaled. Scales subcircular, truncate at base; circuli regular in arrangement, those in nuclear area enlarged or absent; radial folds on basal portion of scale well developed, about 8 to 14 in number; a moderately narrow area along apical margin of scale with short radially arranged lines, each composed of a series of cones or cone-like structures, slightly hastate in outline, truncate at tip, appearing as if the apex of one had pierced the base of the one immediately in front of it; the terminal cone in each row entire, forming the series of spine-like structures along apical margin.

Dorsal spines long and slender, fourth spine longest, 1.26 in head, spines following this graduated backward; membranes of anterior spines deeply incised; soft dorsal moderately low, evenly rounded; caudal short, obliquely truncate; anal bluntly right-angled, second

and third spines subequal, the second slightly stronger than the third; ventrals 1.14, short, tips not reaching vent; pectorals 1.10.

Color in alcohol: Silvery, tinged with a very pale lemon yellow; a narrow black saddle across upper part of interorbital, not reaching eye; a small black area on upper part of eye and adjacent interorbital region; an irregular black saddle from in front of origin of dorsal downward across upper part of opercle, duskiness extending across upper part of preopercle to posterior margin of eye; a black area crossing fifth to ninth dorsal spines and extending downward to middle of side; a broad black band including last dorsal spine and anterior third of soft dorsal extending downward and backward across base of soft dorsal, caudal peduncle and posterior third of anal; margin of soft dorsal silvery white, the tips of the rays very narrowly edged with black, a narrow inframarginal black line below marginal band, area between this and broad black band crossing base of fin dusky white; a blackish segment on tips of middle caudal rays; anterior to this a similar white band preceded by a black crescent fading out on base of fin; anterior two-thirds of anal silvery white, posterior third, black; membranes of spines and tips of anterior rays black; dusky or blackish lines extending downward and backward and upward and backward along the rows of scales, forming a checker board appearance and emphasizing scale arrangement.

This species resembles *C. xanthurus* but differs markedly in coloration, in number of dorsal spines, in smaller scales, and in having the rows that extend downward and backward more nearly horizontal.

Type.—Cat. No. 67353, U.S.N.M., 9.6 cm. in length, from Agojo Point, Catanduanes Islands, Pacific coast of Southern Luzon, Philippine Islands.

Another example 8.5 cm. in length was taken at Port San Pio V, Camaguin Island, north of Luzon. This individual differs slightly in coloration from the type; the black markings on body are more pronounced, the black saddle across interorbital is interrupted on the right side, and the black and white markings of caudal are more distinct. Color in life: No yellow; pale parts silvery, darker parts black.

HENIOCHUS SINGULARIUS, new species.

Dorsal XII, 25; anal III, 17; scales 11 + 26 = 50.

General shape trapeziform; head 3.31, short, deep, upper profile from tip of snout to insertion of dorsal comparatively straight; body compressed, elevated, depth 1.45; caudal peduncle half as long as deep, depth 2.60; eye 3.75, high, rather small; snout 2.44, short, blunt; mouth small, terminal, lips thick and fleshy, concealing teeth; maxillary short; nostrils large, the anterior with a well-developed fold ending in a flap posteriorly; posterior nostril elongate; inter-

orbital 3.35, raised, somewhat convex; bony projections over eyes and on forehead moderately developed; preopercle weakly denticulate; teeth small, close-set; gill membranes narrowly joined to the isthmus; peritoneum white.

Scales moderate, regular in arrangement; lateral line complete, moderately arched, parallel with contour of body; about 44 transverse rows of scales between opercle and base of caudal; vertical fins scaled, scaly sheath not extending to tip of dorsal spines, the line of

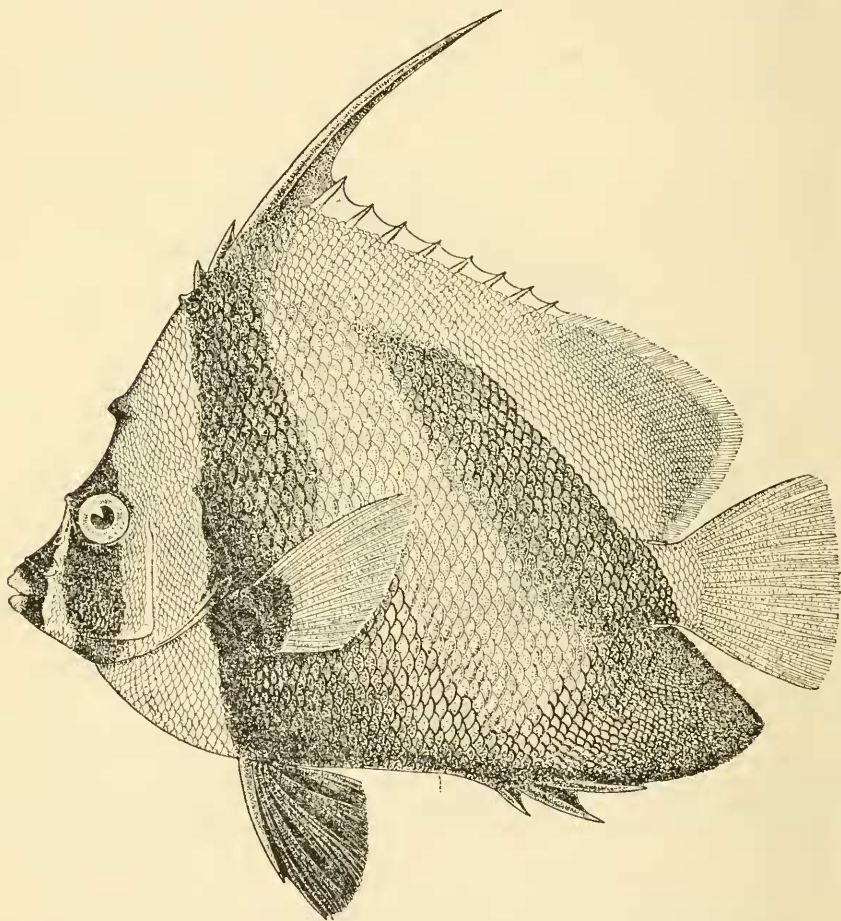


FIG. 2.—HENIOCHUS SINGULARIUS. (From the type. Three-fifths natural size.)

demarcation very distinct; head scaled; lips, upper surface of snout, and opercular flap naked. Scales broad, basal margin truncate, apical margin rounded; sculpturing of scale like that in *Chatodon*; circuli numerous; basal radial folds well developed, few in number; hastate structures composing radial lines on apical margin very distinct.

Dorsal fin inserted anteriorly, distance from tip of snout to origin of dorsal 2.06 in length; first to third dorsal spines relatively short,

graduated; fourth spine 1.90 in length, long, filiform, provided with a broad free membrane extending to tip of spine, other spines except last graduated; soft dorsal moderate, not so high as in *H. monoceros*, margin rounded; caudal truncate; anal deep, obtusely angled, spines graduated; ventrals 1.14, rounded, short, not reaching vent, their base under base of pectorals; pectorals nearly as long as head.

Color in alcohol: Head and nape encircled by alternating bands of black and dusky silvery-white; the first band, jet black in color, encircles the mouth and extends backward on snout to anterior nostril; the second, silvery-white, runs parallel with first and extends backward on top of head to bony projections over eyes; the third, the black ocular band, about width of eye, crosses forehead, extends downward in front of and through anterior seven-eighths of eye, meeting its fellow on under surface of head; the fourth, dusky silvery-white, covers space between ocular band and base of dorsal and extends downward across posterior border of eye and opercular region, meeting its fellow on breast, where it widens out to base of ventrals; posterior border of opercle black; tips of lips yellowish; trunk posterior to vertical from insertion of dorsal to base of ventrals, including ventrals and anal, black; a lighter area, shading into the black, widest ventrally, extends from third to fifth dorsal spines downward and backward to base of anal, shading into black coloration of anal rays; remainder of dorsal, caudal, posterior portion of caudal peduncle and pectoral rays golden yellow; base of pectoral and region below, including ventrals and anal spines, jet black.

Color in life: Upper portions of silvery bands on head, before described, slightly dusky, with a faint brassy wash; first and second dorsal spines black; third spine gray, the color continued as a lighter band diagonally across the black coloration of trunk to middle of anal; centers of scales on darker ventral portions of trunk somewhat pearly or purplish margined with darker brown; scales under the posterior portion of dorsal black, particularly about margins, the centers with a steel bluish area, which becomes smaller toward base of anal; dorsal from tip of fifth spine to base of sixth and diagonally along its basal edge, including the upper and hinder portion of caudal peduncle, and all of caudal fin, cadmium orange; front and posterior margins of anal purplish black; base of pectoral, including base of rays and all of the scaled portion, blackish, the remainder lemon yellow; ventrals black.

This species resembles *H. monoceros*, but is readily differentiated from it by the form of the body, being slenderer and not so nearly circular, the contour lines of dorsal and ventral surfaces rather strongly converging posteriorly; by the longer head and straighter dorsal outline of head; by the smaller eye; by differences in the average number of dorsal and anal rays; by the position of the spinous

dorsal, its insertion being considerably nearer tip of snout in this species, the interspaces between the dorsal spines being normally greater; and by the marked differences in coloration.

The Bureau of Fisheries steamer *Albatross* obtained examples of this species from the following localities in the Philippine Archipelago: Batan and Rapurapu Islands, Lagonoy Gulf, Luzon; Galvaney and Alibijaban Islands, Ragay Gulf, Luzon; Port Dupon, Leyte; Murcielagos Bay, Mindanao; and Ulugan Bay, near Rita Island, Palawan; also from Soo Wan, Formosa; Si Amil Island, eastern Borneo; Binang Unang Island, Gulf of Tomini, Celebes; and Gane Road, Gillolo Island.

Type.—Cat. No. 67354, U.S.N.M., 22.8 cm. in length, from Alibijaban Island, Ragay Gulf, Luzon.

HOLACANTHUS MULTIFASCIATUS, new species.

Dorsal XIII, 17; anal III, 16; scales 7 + 22 = 46.

General form elliptical; head 3.25, upper profile steep, nearly straight; body compressed, curvature of dorsal and ventral surfaces similar, depth 1.55; caudal peduncle short and slender, depth 2.20; eye 3.10, rather small; snout 2.75, short and blunt; mouth small, terminal; maxillary short; nostrils of moderate size, the anterior with a fold ending in a flap posteriorly, the posterior elliptical; interorbital 3.50, flattened; preorbital armed with several strong, sharp denticulations; denticulations on vertical limb of preopercle well developed; spine at angle strong, curved, longer than snout, two weaker spines on horizontal limb; teeth fine, brush-like, trilobed, lateral lobes small; rows of teeth distinct, with well-marked interspaces; gill-membranes free from isthmus; peritoneum silvery-white.

Scales regular in arrangement, those on middle of side slightly larger than others; 30 transverse rows between opercle and end of last vertebra; vertical fins and head finely scaled. Scales subrhomboidal, strongly ctenoid; circuli fine, regular; basal radial folds comparatively few, converging, and extending to nuclear region; about 17 to 20 rod-like structures ending in a well-developed spine extending from nuclear region to apical margin, characteristically different from the sculpturing of the same region on the *Chætodon* scales.

Dorsal spines slender, curved, fifth slightly longer than others, 1.46; membranes of anterior spines deeply incised; soft dorsal higher than spinous dorsal, evenly rounded; caudal short, margin rounded; anal similar to soft dorsal; anal spines well developed; ventrals 2.65 in length, first ray filamentous, its tip reaching base of second anal spine; pectorals slightly longer than head.

Color in alcohol: Dusky cream, crossed by ten seal-brown vertical bands of about the same width as the interspaces; first band, the

ocular, slightly narrower than eye, crosses nape in front of dorsal and extends downward across base of preopercular spine toward base of ventral, fading out on breast; second band extends from first and second dorsal spines downward across posterior border of opercle and base of pectoral, traces of it reaching behind base of ventrals; third to eighth cross-bands have their origin on spinous dorsal, seventh and eighth crossing anterior basal portion of soft dorsal, thence extending downward across base of anal; ninth band crosses tips of last two dorsal spines, extends across middle of soft dorsal rays, anterior part of caudal peduncle, and middle of anal rays; tenth band crosses upper third of soft dorsal, base of caudal peduncle, and posterior third of anal; traces of another band crossing tips of soft dorsal rays, base

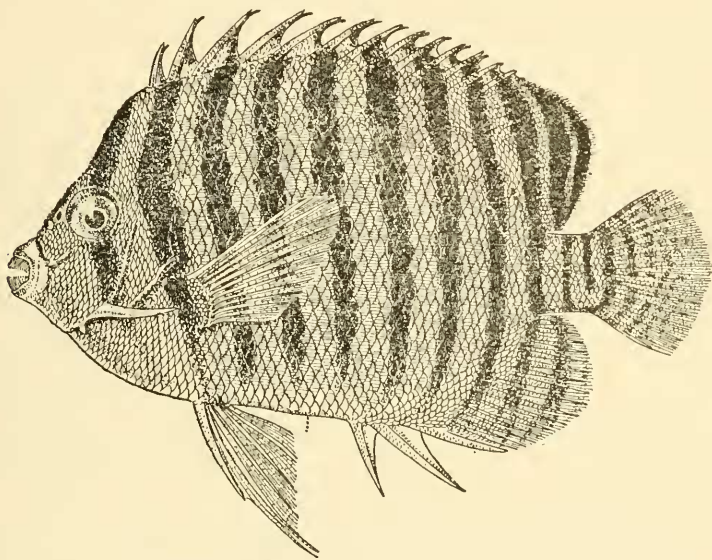


FIG. 3.—*HOLACANTHUS MULTIFASCIATUS*. (From the type. Natural size.)

of caudal, and tips of anal rays; the body bands are widest at top; those on lower part of anal faded to yellowish-white (orange in life); a short median stripe on top of head, widest between eyes; traces of a dusky-brown circumoral band; caudal crossed by five bands, the first complete, the second with a single interruption, the others composed of a series of brown blotches, those nearest tip least distinct; anal spines white; ventrals white; pectorals dusky.

Color in life of an individual from Mabul Island (7.2 cm. long): Ground color pearl gray, paler below, crossed by ten dark brown bands merging into orange ventrally, bands slightly wider above than below, slightly narrower than eye in widest part and about equal to interspaces; the first, the ocular band, becomes orange below eye; an orange circumoral ring; snout and chin dusky; a short brown stripe between eyes; a black blotch near middle of brown margin of

soft dorsal; bands on anal mostly orange; ventrals cadmium yellow, produced tip white; pectorals hyaline.

This species has characters intermediate between the subgenera *Chætodontoplus* Bleeker and *Centropyge* Kaup. It has the form of body and fins of the former and the larger scales of the latter.

The collection contains examples of this species from Port Galera, Mindoro; Romblon Harbor, Romblon Island; Mabul Island, Borneo; Buka, Dodepo, Pasejogo, and Binang Unang Islands, Gulf of Tomini, Celebes; Uki, Bouro Island, and Talisse Island, Dutch East Indies.

Type.—Cat. No. 67355, U.S.N.M., 9.3 cm. in length, from Port Galera, Mindoro.